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Attorneys for Petitioner and Plaintiff
ADRIAN RISKIN

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF LOS ANGELES

ADRIAN RISKIN,	Case No.: 19STCP05266
Petitioner and Plaintiff,	**DECLARATION OF MARTIN HAEBERLI IN SUPPORT OF PETITIONER'S MOTION FOR WRIT OF MANDATE**
vs.	
CITY OF LOS ANGELES,	**DATE: November 11, 2020**
	TIME: 1:30 p.m.
Respondent and Defendant.	**DEPT: 85**
	JUDGE: HON. JAMES C. CHALFANT

I, Martin Haeberli, declare as follows:

1.   I have been retained as an expert for Petitioner Adrian Riskin in the above-captioned action. I am over the age of eighteen and have personal knowledge of the facts set forth in this declaration. If called I could and would testify competently to the matters stated herein.

MEMORANDUM OF POINTS AND AUTHORITIES IN SUPPORT OF PETITION FOR WRIT OF MANDATE

2. I have more than 40 years of experience with computer software, systems, and hardware. I have served as a consulting and testifying expert in numerous technology cases. A copy of my curriculum vitae is attached hereto as Exhibit 1. Starting in 1971, while studying computer science and electrical engineering at the University of Wisconsin, Madison, I worked for the University as a systems programmer, first for the Nuclear Physics department, and later for the Psychology department. In that capacity, I developed and maintained operating system software, wrote software to allow computers to communicate with the campus mainframe, and developed software for scientific applications, such as acquisition and analysis of data from physics experiments. I left the University of Wisconsin in 1974 and held positions with a number of companies, including Bolt, Beranek and Newman, Inc., where I helped develop software for early routers for the ARPAnet, the predecessor to the Internet, and Xerox Palo Alto Research Center (PARC), where I worked on chip design and manufacturing and on enhancing the design of the original optical computer mouse. From 1982 to 1996 I was employed at Apple Computer, where I worked on numerous projects, including in the Advanced Technologies Group. I joined Netscape in 1996 as its Director of Technology, and since 1999 I have been an independent consultant and expert witness. I have worked in data communication and networking since at least 1973, including work on the ARPAnet, TCP/IP for the early Internet, including building the first IP version 2 / version 3 / version 4 packet gateway while at BBN. As an expert I have worked on many cases involving email systems, and on cases involving email production.

3. I am familiar with the process of exporting mailboxes (folders) and emails from various email systems, including Gmail and more generally, for example, Microsoft Outlook and IMAP-based systems, into mbox, and eml formats.

4. I am also familiar with tools to bulk convert, for example, mbox (mailbox) files into their individual constituent emails as .eml files, as well as to convert .eml files to .pdf.

5. I am familiar with the process of making edits, such as redactions, to files in mbox, eml, or .pdf formats.

6. An entity that uses Gmail can identify certain emails and mark them for inclusion with one or more Gmail 'label(s)' to collect the identified emails.

7.   Once that has been done, selected labels can be chosen for archiving in mbox format using Google's 'takeout' capability, or they can be retrieved using free software such as Thunderbird. Only a few simple steps are required. With 'takeout', the web page at https://www.kerneldatarecovery.com/blog/how-to-export-mbox-file-from-your-gmail-account-and-restore-mbox-emails-back-to-gmail-account/ describes a way to do so. If using Thunderbird, just log into the account and synchronize, waiting for all mails to be downloaded. Then the mbox files will be with the Thunderbird data on the computer running Thunderbird.

8.   If needed, mbox files can be split into individual eml files. An example open source tool to convert mbox to eml is mbox2eml : https://sourceforge.net/projects/mbox2eml/ . The eml files can later be re-combined into an mbox file. This is as easy as 'concatenating' or copying all the eml files, one after the other, into a resulting mbox file.

9.   Mbox files and eml files are text files, and can be edited with any standard text editor. Because mbox files can be quite large, as a practical matter, it is more straightforward to edit or redact eml files individually.

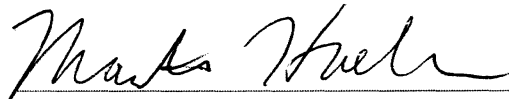10.   Such edits or redactions can be made without converting the eml file to pdf.

11.   There are many methods to make edits, such as redactions, to one or more Gmail messages without converting them to pdf.

12.   One simple way to provide a batch of emails from Gmail with redactions is as follows: first, as outlined above, mark the responsive emails with a Gmail "label" and archive the labeled emails into mbox format. Then, convert, or split, the mbox into its constituent individual emails as eml files. Then use a text editor to inspect each eml file, one by one, and edit to redact as needed. These eml files can then be produced individually, along with a designation of their parent 'label' name, or can be recombined into a redacted mbox file, which could then be produced to the requestor.

13.   Additionally, if an agency wishes to redact specific words or phrases from all emails within an mbox file – such as a specific telephone number, email addresses, or social security number –an agency can use a "rules-based" open source tool such as mbox-redactor : https://github.com/mclaughlin/mbox-redactor. Mbox-redactor functions similarly to a word

processor's "find and replace" function and can locate identified values (i.e. words, letters, phrases, numbers) within an mbox file and replace that value with another value (such as with the phrase "REDACTED") which alleviates the need for a staff member to review each eml file for that word or phrase.

I declare under perjury under the laws of the State of California that the foregoing is true and correct. Executed on October 12, 2020 at Redwood City California

Martin Haeberli

EXHIBIT A

Martin P. Haeberli

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EXPERIENCE

2000 – present   *HAEBERLI ASSOCIATES*
                       MANAGING CONSULTANT

Perform confidential technology expert & expert witness consulting for intellectual property attorneys and their clients, including Rembrandt v Comcast et al (for Rembrandt); work on patent analysis for Sonnenschein Nath & Rosenthal; work on patent analysis for iPotential and for Intellectual Ventures; work on a demonstration system for Prof. John Mitchell of Stanford, and advise on patent prosecution for The Mueller Law Office.

Example Assignments:

In 2014, selected to consult for Bockstar in Bockstar Technologies LLC v. Cisco Systems Inc., 13-cv-2020 (SLR) (D. Del.), working through Covington & Burling, LLP.

In 2014, consulted to Mr. Stuart Soffer, confidential work re source code analysis for a copyright / trade secrets case - supporting defendant Adorama et al in Alexander Interactive, Inc. et al v Adorama, Inc. et al, Case No. 12 CV 6608 (PKC) – (SD – NY).

In 2014, consulted for Nexenta Systems, advising re litigation strategy defending against potential litigation from plaintiff Crossroads Systems, Inc., working through NixonPeabody.

In 2014, consulted for Yahoo, defending against plaintiff MXGO, working through McDermott.

In 2013, selected to consult for FujiFilm in FujiFilm v Motorola Mobility LLC, Case No 3:12-cv-03587-WHO (N.D. Cal), working through MorganLewis.

In 2013, selected to consult for Maxim in MDL No. 2354 in the United States District Court for the Western District of Pennsylvania, working through Tensegrity Law Group.

In 2012, selected to consult for HTC in Certain Electronic Devices, Including Mobile Phones and Tablet Computers, and Components Thereof, ITC Inv. 337-TA-847, through McDermott, Will & Emery. (Nokia as plaintiff, HTC as defendant.)

In 2012, selected to consult for Dr. Martin Walker on matters related to analysis of public evidence about the operation of Android source code and Android devices.

In 2012, selected to consult for Apple in Apple Inc. v. Samsung Electronics Co., et al., Case No. 12-cv-00630-LHK (PSG) (N.D. Cal), and potentially other related patent infringement actions, working through Gibson, Dunn & Crutcher LLP.

In 2012, selected to consult for OIP Corporation in matters adverse to Amazon.com, Inc. in Case No. 3:12-cv-01233-EMC, working through Tensegrity Law Group.

In 2012, selected to be a consulting (and perhaps testifying) expert for HumanEyes in ITC and US Federal District Court actions vs various Sony parties (ITC-337-TA-842 and Delaware 1:12-cv-00398-GMS

In 2012, source code audit and related work for Trend Micro via McDermott.

In 2012, selected as a consultant for defendant Websense in the matter Finjan, Inc. v. McAfee, Inc., Symantec Corp, Webroot Software, Inc . Websense. Inc. and Sophos, Inc., District of Delaware Case No. 1:0-CV-00593-GMS, working through Cooley Godward.

In 2012, selected as a consulting expert for defendant HTC in the matter Wi-LAN v. Alcatel, et al. Eastern Dist. of Texas, Case No. 6.10-cv-521, working through Sheppard Mullin.

In 2012, selected to be a consulting (and perhaps testifying) expert for Apple in Apple Inc. v. Samsung Electronics Co., Case No. 11-cv-01846 (N.D. Cal.) and ITC Docket Nos. 2824 and 2827 as well as international patent litigation where Apple and Samsung are opposed, working through WilmerHale.

In 2011, selected to be a consulting expert for Extricom in Extricom, Ltd. v. Meru Networks, Inc. Civil Action No. 10-391-GMS (D. Del.), working through Sheppard Mullin.

In 2011, selected to be a consulting and perhaps testifying expert for Apple in Motorola Mobility, Inc. v. Apple, Inc., Case No. 10-cv-00867 (D. Del.); Motorola Mobility, Inc. v. Apple, Inc., Case No. 10-cv-23580 (S.D. Fla.); Apple Inc. v. Motorola, Inc. and Motorola Mobility, Inc., Case Nos. 10-cv-00661 and 10-cv-00662 (W.D. Wis.); In the Matter of Certain Wireless Communication Devices, Portable Music and Data Processing Devices, Computers and Components Thereof, ITC Investigation No. 337-TA-745; In the Matter of Certain Mobile Devices and Related Software, ITC Investigation No. 337-TA-750 (collectively, the "Actions"), through Weil, Gotshal & Manges LLP.

In 2011, selected to be a consulting (and perhaps testifying) expert for Nielsen in The Nielsen Company (US), LLC v. comScore, Inc, U.S. District Court, Eastern District of Virginia, Norfolk Division Case No. 2:11-cv-00168-MSD/TEM; comScore, Inc. v. The Nielsen Company (US), LLC and NetRatings, LLC, d/b/a Nielsen Online, U.S. District Court, Eastern District of Virginia, Alexandria Division, Case No. 1:11-cv-00290-LMB/TRJ, working through Jones Day.

In 2011, selected to be a consulting (and perhaps testifying) expert for Verizon in TiVo v. Verizon Communications, Inc. et al. (ED-TX 2:09-cv-00257-DF), working through Kellogg, Huber, Hansen, Todd, Evans & Figel.

In 2011, selected to be a consulting expert for The Gap in Red Hat, Inc. v. Bedrock Computer Technologies LLC, Case No. 6:09-cv-00549-LED (E.D. Tex.), working through McDermott Will & Emery.

In 2011, selected to be a consulting expert for Yahoo in Bedrock Computer Technologies LLC v. Softlayer Technologies, et.al., Case No. 6:09-cv-00269-LED (E.D. Tex.) working through McDermott Will & Emery.

In 2010, selected to be a consulting expert for Verizon in ActiveVideo Networks, Inc. v. Verizon Communications, et al, Case No. 2:2010-cv-00248-RAJ, working through Kellogg, Huber, Hansen, Todd, Evans & Figel.

In 2010, selected to be a consulting testifying expert for MotionPoint in TransPerfect Global, Inc. et al v. MotionPoint Corporation (ND-CA 4:10-CV-02590-CW), working through McDermott Will & Emery.

In 2010, selected to be a consulting testifying expert for STMicroelectronics in the matter Avago v. ST et al, Civil Action No. 6:2010-cv-00092-LED, United States District Court, Eastern District of Texas, Tyler Division, working through Thompson & Knight LLP.

In 2010, selected as a consulting expert for defendant HTC in the matter MobileMedia Ideas LLC v HTC Corporation et al. (ED-TX 2:10-cv-00112-TJW), working through McDermott Will & Emery.

In 2010, selected as a consulting expert for defendants Adobe, Amazon.com, Intuit, LinkedIn, MySpace, Newegg, Sears, Target, and Wyndam in the matter Site Update Solutions LLC v Accor North America Inc et al (ED-TX 10-cv-00151), working through McDermott Will & Emery.

In 2010, selected as a consulting expert for source code analysis in support of plaintiff Verizon in Verizon v. Cablevision (ITC 337-TA-712), working through Kellogg, Huber, Hansen, Todd, Evans & Figel.

In 2009, selected as the testifying-track expert witness for source code analysis in support of defendant's noninfringement positions (Sun v NetApp - ND-CA - C-07-05488).

In more recent projects for diverse clients, conducted source code review in discovery of multiple large source code bases, built and analyzed infringement test systems, conducted review of machine learning art relevant to client's patent portfolio, advised in patent prosecution, and conducted patent portfolio reviews.

2003 – 2011	*__MANATT, PHELPS & PHILLIPS__*

TECHNICAL ADVISOR
Perform confidential technology expert & expert witness consulting for intellectual property attorneys and their clients. Standing consulting agreement with Manatt, Phelps, & Phillips, Palo Alto Patent Litigation and Patent Prosecution team since June, 2004. Work with Manatt, Phelps, & Phillips and their clients since August, 2003.
- Visto v Seven – (Eastern District of Texas) – all work representing plaintiff Visto. Assisted Visto in developing and pursuing its case. Performed infringement analysis; reviewed briefs; developed infringement theories and claim charts; reviewed document production; assisted testifying expert in analysis of Seven's system and source code and preparation of expert report on Seven's infringement of Visto's patent's claims; assisted testifying expert in rebutting Seven's invalidity assertions made against Visto's patents; assisted in deposition of technical witnesses and testifying experts on infringement and invalidity of Visto's patents; assisted at trial. Initial complaint filed in 2003. Trial held in Marshall, Texas in April, 2006. Jury found for Visto as plaintiff, found all asserted claims infringed and not invalid. Case settled while defendant's appeal was pending on terms favorable to Visto.
- Visto v Microsoft – (Eastern District of Texas) – all work representing plaintiff Visto. Assisted Visto in developing and pursuing its case. Advised on independent review of merits of case for due diligence purposes; advised potential Visto investor on merits of case, which resulted in a significant additional investment in Visto. Performed infringement analysis; reviewed briefs; reviewed Microsoft's document production; developed infringement theories and claim charts; assisted testifying expert in analysis of Microsoft's system and source code and preparation of expert reports on Microsoft's infringement of Visto's patent's claims; assisted testifying expert in rebutting Microsoft's invalidity assertions made against Visto's patents; analyzed Microsoft's asserted patents (in cross-complaint) for potential non-infringement and invalidity theories, assisted in depositions of technical witnesses and testifying experts on infringement and invalidity of Visto's patents. Advised in drafting of initial complaint filed in 2005. Case settled on terms favorable to Visto.
- Visto v Good – (Eastern District of Texas) – all work representing plaintiff Visto. Assisted Visto in developing and pursuing its case. Performed infringement analysis; reviewed briefs; developed infringement theories and claim charts; reviewed Good's document production; assisted testifying expert in analysis of Good's system and source; assisted testifying expert in rebutting Good's invalidity assertions made against Visto's patents; advised in drafting of initial complaint filed in 2005. Case has been

settled by Motorola's sale of Good to Visto; Visto is now operating under the "Good" brand.

- Visto v RIM (and related cases) – (Eastern District of Texas) – all work representing plaintiff Visto. Assisted Visto in developing and pursuing its case. Performed infringement analysis; reviewed briefs; developed infringement theories and claim charts; reviewed RIM's document production; assisted testifying expert in analysis of RIM's system; assisted testifying expert in rebutting RIM's invalidity assertions made against Visto's patents; advised in deposition of RIM's technical. Advised in drafting of initial complaint filed in 2006. All open Visto – RIM cases settled in July 2009.
- Visto v Smartner (and related cases) – (Eastern District of Texas) –all work representing plaintiff Visto. Assisted Visto in developing and pursuing its case. Performed infringement analysis; reviewed briefs; developed infringement theories and claim charts; reviewed document production; assisted testifying expert in analysis of Smartner's system and source code and preparation of expert reports on Smartner's infringement of Visto's patent's claims; assisted testifying expert in rebutting Smartner's invalidity assertions made against Visto's patents; assisted in deposition of Smartner's technical witnesses on infringement of Visto's patents. Advised in drafting of initial complaint filed in 2005. Case settled on terms favorable to Visto.
- RIM v Visto, (Northern District of California) – all work representing plaintiff Visto. Assisted Visto in defending its case and in developing its cross-complaint on its own patents. Performed infringement analysis; reviewed briefs; developed infringement theories and advised on the development of claim charts. Initial complaint filed by RIM in 2007.
- RIM v Visto – (Canada) – all work representing plaintiff Visto. Assisted Visto Canadian local counsel, Gilbert's Law Group, in defending its case. Performed invalidity analysis; reviewed briefs and draft expert reports; developed invalidity theories and claim charts; consulted with testifying experts in analysis of RIM's patents and claims and in preparation of expert reports on Visto's non-infringement (and on invalidity) of RIM's patents' claims. Initial complaint filed by RIM in 2005.
- RIM v Visto, Visto v RIM (UK) – (London, England) – all work representing plaintiff Visto. Assisted Visto's local counsel, TaylorWessing, in defending its case and in developing and and pursuing its cross-complaint. Performed infringement analysis; reviewed briefs; developed infringement theories; advised TaylorWessing in its preparation of testifying expert on RIM's system and preparation of expert reports on RIM's infringement of Visto's patent's claims; assisted testifying expert in rebutting RIM's invalidity assertions made against Visto's patents. Initial complaint filed in 2005. Trial completed in early 2008. In the run-up to trial, RIM withdrew both its asserted patents from issuance and thus applicability in the UK, presumably because Visto's invalidity arguments were so strong. Court found Visto's patent infringed, but invalid.
- Macrovision v 321 Studios LLC – (Southern District of New York) – all work representing plaintiff Macrovision; performed analysis of 321 Studios' products in light of Macrovision's asserted patent claims and associated DMCA claims; assisted in drafting of complaint; assisted with litigation until the matter was resolved to the client's satisfaction. Client / plaintiff Macrovision was granted preliminary injunction against defendant 321 Studios enjoining its sale of accused products; this matter eventually settled in favor of Macrovision. Also advised in related enforcement action by Manatt on behalf of Macrovision as further providers of similar products were also notified of the injunction and stopped from selling such related products commercially.
- Macrovision v Sima / Interburn – (Southern District of New York) – all work representing plaintiff Macrovision; performed analysis of Sima's and Interburn's products; assisted in drafting of complaint; assisted in drafting of technical expert's report against Sima's accused products; assisted in deposition of Sima's technical expert; assisted with litigation until the matter was resolved to the client's satisfaction. This matter eventually settled in favor of Macrovision.
- Human Electronics v Emerson Electric (et al) – all work representing defendant Emerson Electric. Assisted in non-infringement and invalidity analysis. Analyzed defendant's products, plaintiff's patent and products. Eventually settled, favorably to

Emerson Electric. Technology related to telephone devices capable of detecting a call-wating signal while a modem was in use on the same telephone line.
- CSIRO v Belkin (et al) – all work representing defendant Belkin; analyzed CSIRO's patent and claims, and related prior art; researched related IEEE patent letters. Client chose to consolidate its representation with other defendants at another law firm. Technology related to IEEE 802.11 wireless LANs, in particular, the use of OFDM (Orthogonal Frequency-Division Multiplexing) in "confined multipath environments".
- Advised in patent prosecution; reviewed office actions; advised in drafting office action replies; drafted (for review by attorneys and clients) patent applications and related documents for a range of clients in the network security space, internet payments technology, content delivery networks, and email infrastructure technology.
- Perform a broad range of litigation and patent-prosecution-related activities at Manatt. Conduct pre-litigation analyses in advance of filing patent complaints. Analyze accused products for potential infringement. Conduct analyses for patent litigation defendants regarding potential infringement and invalidity. Analyze patent portfolios and provide strategic guidance to clients. Perform pre-acquisition patent-focused due diligence for clients. Provide general guidance on technology matters for patent team

7/2002 – 12/2004	**_MARCONI PARTNERS_**

MARCONI PARTNERS
MANAGING DIRECTOR
Founding managing director of new venture capital firm focused on opportunities created by the infusion of wireless technology broadly into the worldwide economy:
- Conceived initial investment thesis based on observation of key trends in wireless technology and regulation
- Created investment criteria and decision process
- Recruited additional partners
- Developed and managed startup agenda, finance and operations
- Outlined, wrote and managed private placement memorandum
- Member, investment committee

1998 – 1999   **_OVERSEA SYSTEMS_**
CHIEF TECHNOLOGY OFFICER
Directed development of business and technology strategies for Internet start-up serving the international container shipping industry. Coordinated product development efforts with customers to ensure viability and increase likelihood of success. Designed scalable, three-tier Web-based architecture enabling the business service; managed team of 10 developers in system integration and implementation. Managed remote team in installation and deployment of operations in Singapore:
- Secured capital funding through effective presentation of system to investors, potential partners, and potential customers
- Developed innovative methodology for operating scalable, reliable, distributed server farm that served as key building block for technology strategy
- Effectively managed multiple development partners in design and integration of product to deliver the company's service

1996 – 1998   **_NETSCAPE COMMUNICATIONS_**
1997 – 1998   **DIRECTOR OF EDUCATION MARKETING**
Challenged to rebuild declining market share in K-12 and Higher Education markets. Directed marketing team of four in identification of target customers, strategic product positioning, and development of promotional programs. Developed and administered marketing budget; recruited and reviewed staff. Provided team with training and development opportunities. Represented company's strategies and products to partners and customers:
- Successfully met challenge to eliminate market share erosion in education market, in the face of strong competitive pressure from Microsoft
- Developed innovative pricing model resulting in combined growth of revenue and market share

| 1996 – 1997 | **DIRECTOR OF TECHNOLOGY** |

Recruited to develop company's technology strategy and manage key technology initiatives, combining expertise in market development with deep technology background. Defined product strategy and participated in corporate strategic planning and execution. Primary liaison to press, analysts, partners, customers, and field sales teams regarding Netscape's vision and technology direction:

- Achieved customer-centered product development philosophy through communication with key customers and identification of needs and trends
- Instituted use of Common Object Request Broker Architecture (CORBA) as alternative to costly development of unique, proprietary object model
- Formed partnership with World Wide Web Consortium (W3C) and broad range of vendors in development of Platform for Privacy Preferences (P3P)
- Presented six major industry keynotes communicating Netscape's market vision
- Initiated Netscape's early participation in Internet-related standards bodies

| 1982 – 1995 | ***APPLE COMPUTER*** |
| 1994 – 1995 | **INTERNET WIZARD** |

Managed strategic Internet commerce and education programs through Apple's Advanced Technology Group (ATG) and Research & Development department. Led company's participation in CommerceNet, W3C, and other Internet-related standards bodies:
- Directed e-commerce pilot which pioneered selling software and collecting revenue electronically over the web, successfully integrating technology and business processes to prove viability and generate buy-in from senior management
- Architected, implemented, and operated a highly available, scalable, and reliable web server architecture to support e-commerce pilot

| 1989 – 1993 | **MANAGER, STRATEGIC TECHNOLOGY GROUP** |

Coordinated efforts between marketing and product development teams; developed effective relationships with business and education customers and provided feedback to assist in engineering and product planning processes. Managed technology-licensing initiatives with key players including Apollo and Northern Telecom, and explored partnership opportunities with AT&T:
- Significantly increased market share advantage through leadership in strategic market planning and vital communication of customer needs to product developers

| 1984 – 1988 | **STRATEGIC TECHNICAL ADVISOR, EDUCATION** |

Managed product marketing efforts relating to Higher Education and K-12 markets. Facilitated communication among product engineers, managers, and customers, leading to optimal usage and increasingly customer-focused development:
- Spearheaded formation of technical alliances between Apple and colleges / universities.
- Drove Apple to implement TCP/IP for Macintosh; overcame huge internal resistance (not-invented-here syndrome) to champion the creation of the first standardized implementation of TCP/IP for a personal computer

| 1982 – 1983 | **MANAGER, VLSI DESIGN** |

Directed up to 20 developers in creation of full-custom glue chip for first Macintosh design. Managed internal VLSI team; recruited chip designers and evaluated / selected tools to support operation Facilitated communication among product engineers, managers, and customers, leading to optimal usage and increasingly customer-focused development.
- Managed completion of glue chip in less than six months; tested and met logic specifications on first attempt
- Co-wrote award-winning MacTerminal, the first terminal emulator for Macintosh.
- Led design of "IBM" chip, integrating video, memory controller, and comprehensive glue functions into single chip
- Designed mask-programmed video controller feature on full-custom chip, enabling screen form factor to increase from 384x256 to 512x342 pixels

| 1972 – 1981 | ***XEROX, BBN, TECHMATION, UNIVERSITY OF WISCONSIN*** |

Chip design, Systems programming and hardware / software development positions:
- Worked with Jim Clark, founder of SGI, to test his first Geometry Engine chips (Xerox PARC)
- Designed and developed testable optical mouse chip; also developed test program and technology (Xerox PARC)
- Developed Xerox Alto microcode interpreter for "Butte" systems programming language (Xerox ASD)
- Helped prepare advanced Xerox sales force for Ethernet (Xerox ASD)
- Wrote first IP v2 / IP v3 / IP v4 router (BBN)
- Restructured Pluribus kernel for reliability and maintainability (BBN)
- Managed Psychology department computer lab (University of Wisconsin)
- Co-wrote real-time data acquisition and analysis operating system for Nuclear Physics department (University of Wisconsin)

EDUCATION

Charter Oak State College, New Britain, CT
Bachelor of Science in Information Science Studies
UC Berkeley Extension, Berkeley, CA
Concepts of Relational Database Management Systems
Sandia Labs, Albuquerque, NM
Advanced MEMS, Introduction to MEMS
UC Santa Cruz, Santa Cruz, CA
Intensive seminar in Object-Oriented Programming
California Institute of Technology, Pasadena, CA
Intensive seminar in CMOS design
Massachusetts Institute of Technology, Cambridge, CA
Graduate Seminar in Integrated Voice/Data Networks
University of Wisconsin, Madison, WI
Undergraduate studies in Computer Science and Electrical Engineering

PROFESSIONAL AFFILIATIONS

Association for Computing Machinery (ACM), Senior Member
Institute of Electrical and Electronics Engineers (IEEE), Senior Member
American Radio Relay League (ARRL)
Foresight Institute

ADDITIONAL QUALIFICATIONS

Extra Class Amateur Radio License – W9MPH
First Amateur License received in 1970

ADVISORY BOARDS

AcrossWorld Communications, Santa Clara, CA, 2001 – 2003
Brainstorm Ventures, San Francisco, CA, 2001 – 2003
Amadon Labs, Seattle, WA, 2001
BIAP Systems, Leesburg, VA, 2001 – 2002
Fuse Systems, San Mateo, CA, 2000
KeyAssets, Palo Alto, CA, 2000 – 2002
NodeLogic Networks (Advisory Board, Board of Directors), Seattle, WA, 2002 – 2005
OffRoad Capital Council, San Francisco, CA, 2000 – 2001
Terabeam, Seattle, WA, 1998 – 2000
Douglas Engelbart Institute (formerly Bootstrap Alliance) Board of Directors,
Hayward, CA, 1997 – Present
iCast Board of Directors, Los Gatos, CA, 1996 – 1998

LANGUAGES

Conversational knowledge of German, Swiss-German, and French